

AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A device for soldering contacts on vertically integrated semiconductor chips, comprising:

a clamping device that receives and transports a wafer having components;

a flushing device including a plate with a window, a first gas channel and a first gas outlet opening arranged at the window, the flushing device being aligned parallel to a transporting area of the clamping device intended for the wafer to be held in position above the clamping device;

a chip mount arranged above the clamping device over the window such that a chip can be held on a side of the chip mount facing the clamping device and over the wafer, and the chip can be brought near the wafer by means of a vertical movement of the chip mount with respect to the wafer; and

a heater that heats a chip held on the chip mount from a side of the chip facing the chip mount at least to a degree that a solder applied to an opposite side of the chip is melted,

wherein an edge of the plate is provided with a second gas channel disposed at an edge of the plate and a second gas outlet opening for the second gas channel, which points towards the edge of the plate adapted to expel a gas parallel to the clamping device.

2. (Original) The device according to claim 1, wherein the first gas outlet opening is provided around the window.

3. (Canceled)

4. (Original) The device according to claim 1, wherein the heater comprises a thermal radiation source, which is arranged in such a way that thermal

radiation emitted by the thermal radiation source is directed through the chip mount onto the chip.

5. (Original) The device according to claim 4, further comprising a body which is permeable to infrared radiation and with which a pressing pressure is transferred to the chip is fitted in the chip mount.

6. (Original) The device according to claim 1, wherein the heater comprises an induction coil having electrical terminals and is fitted in the chip mount.

7. (Original) The device according to claim 6, further comprising an electrically conducting body fitted in the chip mount and arranged in such a way that the electrically conducting body can be heated by an induction of eddy currents by means of the induction coil.

8. (Original) The device according to claim 6, wherein the induction coil is arranged such that the induction coil induces eddy currents in the solder applied to the chip held on the chip mount, with which currents the solder is melted.

9. (Currently Amended) A method for soldering contacts on vertically integrated semiconductor chips such that a contact of a chip is soldered onto a contact of a component in a wafer, comprising the steps of:

applying solder to the contact of the chip;
flushing the contacts of the chip and the component with a forming gas,
the forming gas being directed both perpendicular and parallel to the chip;
heating the chip from a side opposite the contact of the chip to melt the solder;
pressing the contacts of the chip and the component onto one another;
and

cooling the solder until it solidifies such that the solder undergoes
isothermal solidification;

wherein the solder is applied such that in a molten state it forms a layer of
a thickness of less than 5 µm on the contact of the chip.

10. (Original) The method according to claim 9, wherein the chip is heated
using a thermal radiation source.

11. (Original) The method according to claim 10, wherein the thermal
radiation source is a laser radiation source.

12. (Original) The method according to claim 10, wherein the thermal
radiation source is a halogen lamp.

13. (Previously Presented) A device for soldering contacts on vertically
integrated semiconductor chips, comprising:

a clamping device that receives and transports a wafer having
components;

a flushing device including a plate with a window, a first gas channel and a
first gas outlet opening arranged at the window, the flushing device being aligned
parallel to a transporting area of the clamping device intended for the wafer to be held in
position above the clamping device;

a chip mount arranged above the clamping device over the window such
that a chip can be held on a side of the chip mount facing the clamping device and over
the wafer, and the chip can be brought near the wafer by means of a vertical movement
of the chip mount with respect to the wafer, the chip mount comprising a lower planar
area for receiving the chip, the planar area having openings around its edge connected
to a channel ; and

a heater that heats a chip held on the chip mount from a side of the chip facing the chip mount at least to a degree that a solder applied to an opposite side of the chip is melted.

14. (Previously Presented) The device for soldering contacts on vertically integrated semiconductor chips according to claim 13, wherein within the chip mount is a body which is permeable to infrared radiation and is provided for transferring mechanical pressure to press the chip onto the wafer.

15. (Previously Presented) The device for soldering contacts on vertically integrated semiconductor chips according to claim 13, further comprises a metallic mirror fitted obliquely in the chip mount, the mirror reflecting the thermal radiation towards the chip.

16. (Previously Presented) The device for soldering contacts on vertically integrated semiconductor chips according to claim 13, further comprises a metallically mirrored prism fitted obliquely in the chip mount, the prism reflecting the thermal radiation towards the chip.

17. (Previously Presented) The device for soldering contacts on vertically integrated semiconductor chips according to claim 13, wherein the heater comprises an induction coil having electrical terminals and is fitted in the chip mount; and an electrically conducting body fitted in the chip mount and arranged in such a way that the electrically conducting body can be heated by an induction of eddy currents by means of the induction coil.